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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,901

05/05/2005

Taro Yokoi

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MCDERMOTT WILL & EMERY LLP  
600 13TH STREET, N.W.  
WASHINGTON, DC 20005-3096

EXAMINER

ALEJANDRO, RAYMOND

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,901	<b>Applicant(s)</b> YOKOI, TARO	
	<b>Examiner</b> Raymond Alejandro	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/05/05 &amp; 11/15/05</u> .                                 | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 1795

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 05/05/05 and 11/15/05 were considered by the examiner.

### ***Drawings***

3. The drawings were received on 05/05/05. These drawings are acceptable.

### ***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
5. The submission of a preliminary amendment on 05/05/05 has been noted, and made of record.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1795

7. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections and/or for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted structural cooperative relationships are: the language “*discharged toward at least one of a site at which the heating medium flows without stopping and a side at which the heating medium is not present*” does not appear to set forth a positive limitation because, as best understood by the examiner, such a language appears to be an all-encompassing limitation which includes the presence or the absence of the heating medium. The examiner does not understand the specifics of the limitation, and how it relates to descriptive subject matter other than an all-encompassing limitation. Further clarification is requisitioned.

9. The language “*the cooling ability of the cooling mechanism is raised by the cooling ability adjustment mechanism*” in claims 6 (lines 7-8 on page 4) and claim 11 (lines 8-9 on page 5) appears to be redundant, incoherent and imprecise, thereby rendering the claim indefinite. The language is not defined by the claim, and the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Yet further, the limitation “*cooling ability*” is not well understood within the meaning of the claim as the degree or extent of cooling is totally unknown or undefined.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 1795

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Aoyama et al 2001/0018139.

The present application is geared towards a fuel cell system wherein the disclosed inventive concept comprises the specific configuration of the hydrogen purging mechanism.

As for claim 1:

Aoyama et al disclose a fuel cell system (TITLE/FIGURE 1) comprising a fuel cell 28 that generate an electromotive force through electrochemical reactions of hydrogen with oxygen (P0098); hydrogen supplying device (material reservoir) 10 (P0098); there is implicitly disclosed the presence of a temperature adjustment mechanism and a heat exchanger as Aoyama et al teach that the temperature of the fuel gas is thus lowered by a heat exchange unit (P0044). Further, Aoyama et al disclose a combustion unit 14 or 23 to supply heat generated therein for the system (P0101 & 0142). (*emphasis added*→) Additionally, shift unit 22 and/or oxidation unit 24 might be taken as the burner in some instances. Aoyama et al also disclose the inclusion of evaporators 12 and 32 (*two additional heat exchangers*) and (P0100).

Aoyama et al also makes known a purging mechanism for purging anode off gas (the hydrogen purging mechanism) (P0186) including a changeover valve 13 provided in the flow conduit of the anode off gas to change over the working flow between the circulation of the separation unit 20 and the discharge to the outside (P0186). *It is noted that separation unit 20 is operatively connected to the combustion unit 14 (the burner). Thus, in operation combustion unit 14 is capable of discharging the generated combustion gas to a site where the heating medium is*

Art Unit: 1795

or is not present while anode-off gas purging takes place as instantly claimed. See conduit lines 12 and 32 (evaporators 12 and 32).

Aoyama et al discloses that the processing during the warm-up operation of the fuel cell, the correction according to the rate of change in the required electric power and the use of auxiliary purge gas source may be arbitrarily chosen for purpose of purging gas regulation (P0207).

Fig. 1

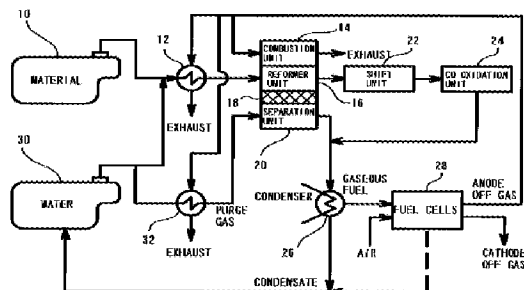
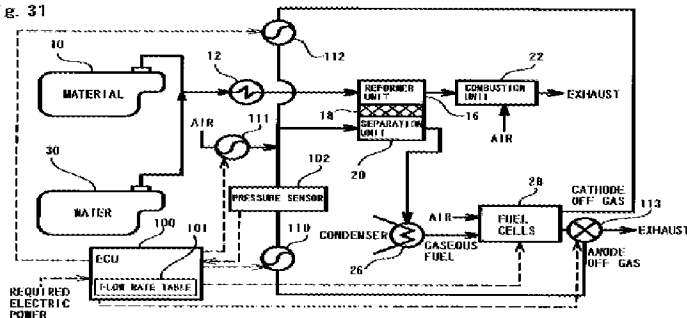


Fig. 31



### **- MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims:**

*I. PRODUCT AND APPARATUS CLAIMS — WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED TO BE INHERENT.*

*Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a*

Art Unit: 1795

*prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).*

*See also In re Ludtke, 441 F.2d 660, 169 USPQ 563 (CCPA 1971) (Claim 1 was directed to a parachute canopy having concentric circumferential panels radially separated from each other by radially extending tie lines. The panels were separated “such that the critical velocity of each successively larger panel will be less than the critical velocity of the previous panel, whereby said parachute will sequentially open and thus gradually decelerate.” The court found that the claim was anticipated by Menget. Menget taught a parachute having three circumferential panels separated by tie lines. The court upheld the rejection finding that applicant had failed to show that Menget did not possess the functional characteristics of the claims.); Northam Warren Corp. v. D. F. Newfield Co., 7 F. Supp. 773, 22 USPQ 313 (E.D.N.Y. 1934) (A patent to a pencil for cleaning fingernails was held invalid because a pencil of the same structure for writing was found in the prior art.).*

*When the prior art device is the same as a device described in the specification for carrying out the claimed method (in this case, functionality), it can be assumed the device will inherently perform the claimed process (functionality). In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986).*

**MPEP 2114 [R-1] Apparatus and Article Claims — Functional Language:**



Art Unit: 1795

*APPARATUS CLAIMS MUST BE STRUCTURALLY DISTINGUISHABLE FROM THE PRIOR ART*

*While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).*

*MANNER OF OPERATING THE DEVICE DOES NOT DIFFERENTIATE APPARATUS CLAIM FROM THE PRIOR ART*

*A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).*

As for claims 2-5:

Aoyama et al also makes known a purging mechanism for purging anode off gas (the hydrogen purging mechanism) (P0186) including a changeover valve 13 provided in the flow

Art Unit: 1795

conduit of the anode off gas to change over the working flow between the circulation of the separation unit 20 and the discharge to the outside (P0186).

If any one of evaporator 12 and 32 is construed as a heat exchanger, then it can be said that anode off gas conduit exhausted from the fuel cell bypasses heat-exchanger 12 when it is diverted to pass through heat exchanger 32 assuming that shift unit 22 or oxidation unit 24 behaves as the burner (See **FIGURE 1**). Additionally, exhaust from oxidation unit 24 bypasses condensers 13 and 32 when it is passed through condenser 26 (See **FIGURE 1**).

Fig. 1

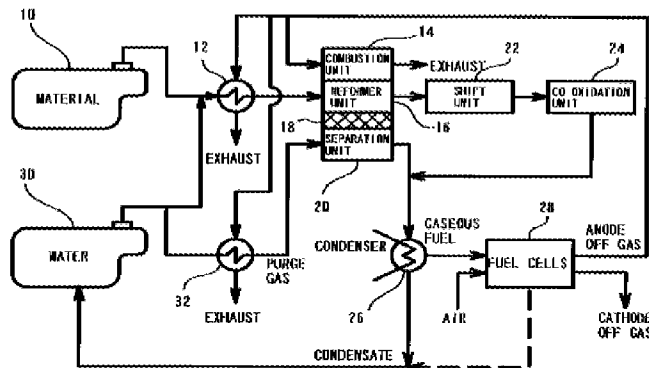
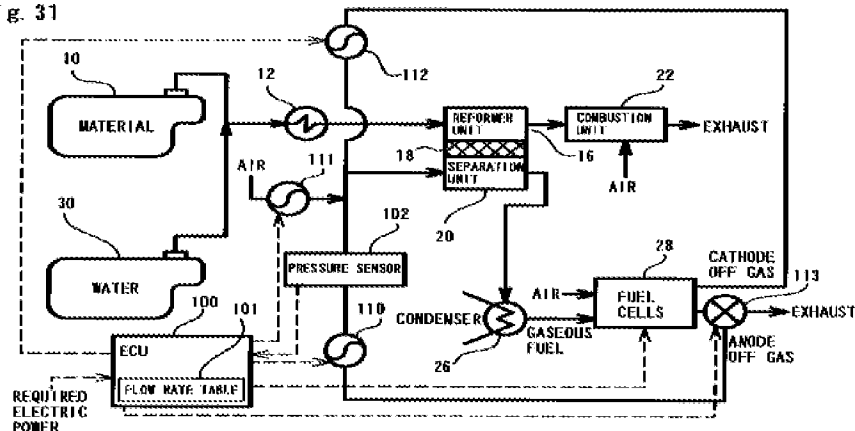


Fig. 31



*It is noted that separation unit 20 is operatively connected to the combustion unit 14 (the burner). Thus, in operation combustion unit 14 is capable of discharging the generated*

Art Unit: 1795

*combustion gas to a site where the heating medium is or is not present while anode-off gas purging takes place as instantly claimed. See conduit lines 12 and 32 (evaporators 12 and 32). (Emphasis added→) See inherency statement above for additional details concerning the conditional statement or proviso related to the limitation: a) "when hydrogen purging is executed..." (claim 2); b) "wherein, if the heating medium passage switching mechanism has set..." (claim 3); c) "wherein, if the heating medium passage has been set..." (claims 4-5).*

As for claims 6-11:

Aoyama et al disclose a condenser 26 in the system function to take the remaining steam out of the hydrogen which has been transmitted from the system component (P0108). *In this case, the condenser 26 can be taken to represent a cooling mechanism.* There is implicitly disclosed the presence of a temperature adjustment mechanism and a heat exchanger as Aoyama et al teach that the temperature of the fuel gas is thus lowered by a heat exchange unit (P0044).

Aoyama et al also makes known a purging mechanism for purging anode off gas (the hydrogen purging mechanism) (P0186) including a changeover valve 13 provided in the flow conduit of the anode off gas to change over the working flow between the circulation of the separation unit 20 and the discharge to the outside (P0186).

*(Emphasis added→) See inherency statement above for additional details concerning the conditional statement or proviso related to the limitation: a) ""wherein, if the heating medium passage has been set..." (claims 6-7); b) "wherein, if hydrogen purging is required..." (claim 8); c) "wherein, if the need to perform hydrogen purging" (claim 9); d) "wherein purging is prohibited..." (claim 10); e) "after which cooling ability of the cooling mechanism is raised..." (claim 11).*

Art Unit: 1795

As for claims 12-14:

Aoyama et al teach that purging rate is set in response to or corresponding the required electric power (P0187, 0189, 0191, 0201). The value of a pressure and a required electric power are critical for regulation of the purging flow rate (P0186). Aoyama et al discloses that the processing during the warm-up operation of the fuel cell, the correction according to the rate of change in the required electric power and the use of auxiliary purge gas source may be arbitrarily chosen for purpose of purging gas regulation (P0207). *Note that the required electric power is directly or indirectly related to fuel cell operating parameters such as cell voltage, operating load, operating time and the likes.*

As for claim 15:

Aoyama et al discloses that the target flow rate of the anode-off gas is attained by regulating the flow rate of anode the off-gas per se (P0195). Aoyama et al discloses that the processing during the warm-up operation of the fuel cell, the correction according to the rate of change in the required electric power and the use of auxiliary purge gas source may be arbitrarily chosen for purpose of purging gas regulation (P0207). *This might imply that hydrogen purging is required based on the duration of the hydrogen purging itself.*

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1795

16. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al 2001/0018139 as applied to claims 6 and 11 above, and further in view of Yang et al 2004/0023083.

Aoyama et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not expressly disclose the specific cooling mechanism being a radiator and the adjustment mechanism being either a pump or fan.

Yang et al disclose a device for controlling a fuel cell system (TITLE). In particular, a temperature regulation device comprising a radiator 51, a fan 52, a heat exchanger 53, and a

Art Unit: 1795

pump 54 for controlling and maintaining a constant temperature for the operation of the fuel cell stack (P0016).

In view of the above, it would have been obvious to a skilled artisan at the time of the invention to use or incorporate the specific radiator and pump or fan of Yang et al in the fuel cell system of Aoyama et al because Yang et al expressly disclose that the disclosed devices are useful for controlling and maintaining a constant temperature for the operation of the fuel cell stack. Thus, they all assist in effectively controlling regulating operating temperature of a fuel cell.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

19. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al 2001/0018139 as applied to claims 6 and 11 above, and further in view of Breault et al 2003/0118883.

Aoyama et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not expressly disclose the specific cooling mechanism being a radiator and the adjustment mechanism being either a pump or fan.

Breault et al disclose a fuel cell power plant including a coolant system 70 comprising, among other elements, a coolant pump 74, a coolant heat exchanger 76, and a fan 78 resembling a radiator (P0027).

Art Unit: 1795

In view of the above, it would have been obvious to a skilled artisan at the time of the invention to use or incorporate the specific radiator and pump or fan of Breault et al in the fuel cell system of Aoyama et al because Breault et al expressly disclose that the disclosed devices are useful for controlling the coolant system of the fuel cell power plant. Thus, they all assist in effectively controlling regulating operating temperature of a fuel cell system.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/  
Primary Examiner, Art Unit 1795

Application/Control Number: 10/533,901

Page 15

Art Unit: 1795